



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,442	09/26/2003	Chandandumar Aladahalli	DB001050-001	8430
24122 7590 08/15/2008 THORP REED & ARMSTRONG, LLP ONE OXFORD CENTRE 301 GRANT STREET, 14TH FLOOR PITTSBURGH, PA 15219-1425				
EXAMINER				
HIRL, JOSEPH P				
ART UNIT		PAPER NUMBER		
2129				
MAIL DATE		DELIVERY MODE		
08/15/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/672,442

Applicant(s)

ALADAHALLI ET AL.

Examiner

Joseph P. Hirl

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-24 and 26-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-24 and 26-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date _____
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered June 13, 2008 for the patent application 10/672,442 filed on September 26, 2003.
2. All prior office actions are fully incorporated into this Final Office Action by reference.

Status of Claims

3. Claims 1-2, 4-24, 26-44 are pending.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 8, 14, 19, 30, 36, 41 recite the limitation "said assigning" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yin et al. (USPN 5,953,517, referred to as **Yin**).

Claims 1, 23

Yin teaches performing a search on a computer using sets of moves to explore possible configurations of objects within a space, said search performed by successively generating a plurality of new object configurations within said space by applying a plurality of object moves and evaluating a design objective at each of said plurality of new configurations until a final configuration is selected and output, and wherein a criterion other than the size of the move is used to determine the order in which the objects are moved within said space moves are applied (**Yin**, c1:34-46; 2:30-42). It would have been obvious to one of ordinary skill in the art at the time of the invention to associate equivalence of the terms "design objective" to "objective function," "sets of moves" to "working through a series of new or "then current" configurations," "criterion other than size of move" to "swapping component positions" for the purpose of achieving an optimum component layout.

Claims 2, 24

Yin teaches the criterion for selecting the move to be applied is based on an amount of change in value of an said objective function incorporating said design objective, with that move expected to cause the greatest amount of change in value of the objective function being selected next (**Yin**, 2:51-60; 6:66-67; 7:1-10).

8. Claims 4-22, 26-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (NASA Contract No. NASI-19480, referred to as **Lewis**)

Claims 4, 26

Lewis teaches determining the effect of a plurality of moves on a set of objects (**Lewis**; page 1:1-10; page 2:4-16; Examiner's Note: (EN): such is the heuristic evaluated at n and $n+1$); organizing said plurality of moves into sensitivity groups according to the effect the moves have on said set of objects (**Lewis**; page 1:1-10; page 2:4-16; EN: such would be n and $n+1$); selecting a sensitivity group (**Lewis**; page 1:1-10; page 2:4-16); picking one move from said set of moves in said selected sensitivity group and applying said move to a saved configuration of objects within a space (**Lewis**; page 1:1-10; page 2:4-16); picking one move from said set of moves in said selected sensitivity group and applying said move to a saved configuration of objects within a space (**Lewis**; page 2:25-31); evaluating a new configuration resulting from applying said move, and if said new configuration improves a design objectives, saving said new configuration, if said new configuration does not improve said design objective, discarding said new configuration (**Lewis**; page 2:25-31); continuing until no moves from said set of moves from said selected sensitivity group result in an improvement in said design objective improved configuration (**Lewis**; page 2:25-31); and determining if more sensitivity groups are available, and if no, outputting said saved configuration, and if yes, returning to said selecting a sensitivity group step (**Lewis**; page 2:25-31). It would have been obvious to one of ordinary skill in the art at

the time of the invention to implement the rank ordered pattern search heuristic in the manner described in Lewis for the purpose of improving component layout.

Claims 5, 27

Lewis teaches determining the effect includes ranking each of said plurality of moves based on an amount of change each move is expected to have on an objective function incorporating said design objective and wherein said organizing includes ordering said moves from highest to lowest ranking (**Lewis**; ¶ 2.1.1).

Claims 6, 12, 17, 22, 28, 34, 39, 44

Lewis teaches ranking includes one of analytically, probabilistically and heuristically ranking (**Lewis**; ¶ 2.1.1).

Claims 7, 13, 18, 29, 35, 40

Lewis teaches determining the effect includes ranking each of said plurality of moves based on an amount of change each move is expected to have on an objective function incorporating said design objective and wherein said organizing includes ordering said moves from highest to lowest ranking (**Lewis**; ¶ 2.1.1). It would have been obvious to one of ordinary skill in the art at the time of the invention to order the rank in the most useful direction where the moves would have dictated such calculation for the purpose of improving the component layout.

Claims 8, 14, 19, 30, 36, 41

Lewis teaches assigning is performed according to one of a geometric progression based on said rankings and said rankings themselves (**Lewis**; ¶ 2.1.1; EN:

Geometric Progression requires that each term in the sequence is given by a multiple r of the previous one ... it does not appear to be possible to create such an arrangement since this would require inappropriate geometric constraints on predetermined components).

Claims 9, 31

Lewis teaches determining the effect includes deriving a function that quantifies the effect each move has on the change in an objective function incorporating said design objective (**Lewis**; ¶ 2.1.1; Fig. 1).

Claims 10, 15, 20, 32, 37, 42

Lewis teaches determining the effect includes determining the non-intersecting volume between an object and itself after applying a move (**Lewis**; page 2:4-16; EN: the non-intersecting volume relates to the point with the highest objective value and to the point with the lowest objective value and when the pattern of points is small, a crude estimate of the direction of steepest descent can be determined).

Claims 11, 16, 33, 38

Lewis teaches ranking each of a plurality of moves on a set of objects within a space based on the effect each move is expected to have on a design objective (**Lewis**; ¶ 2.1.1); and storing the ranking for use in ordering the moves within a computer program for performing a search in which sets of moves are used to generate a plurality of object configurations within said space, and wherein the moves are applied from those moves having the highest ranking to those moves having the lowest ranking (**Lewis**; ¶ 2.1.1; page 2:4-16) It would have been obvious to one of ordinary skill in the

art at the time of the invention to implement the process with a computer and store rankings in the computer memory for the purpose of facilitating calculations of the optimized component layout..

Claims 21, 43

Lewis teaches deriving a function that relates object moves to expected changes in an objective function incorporating a design objective (**Lewis; ¶ 2.1.1; Fig. 1**); and storing said function for use in organizing the moves within a computer program for performing a search in which sets of moves are used to generate a plurality of object configurations within a space (**Lewis; ¶ 2.1.1; Fig. 1**) It would have been obvious for one of ordinary skill in the art to have implemented the concepts of Lewis on a computer to store and search the plurality of configurations for the purpose of converging to a solution.

Response to Arguments

9. The prior art of Lundahl has been withdrawn rendering the related applicants arguments moot.
10. The Declaration under Rule 132 dated June 13, 2008 is acknowledged. The related 2001 Bennett Schedule for Friday, April 20, 2001 would have been published to the public to include all of the participants and advisors. Within the schedule document, an abstract entitled "Using Geometric Sensitivity Analysis to Infer Timing Schedule of Move Sets for a Pattern Search Based 3D Layout Algorithm" is contained with the author identified as Chandankumar Aladahlli and the advisor identified as

Jonathan Cagan. As noted, presentation was announced to the public and typically, copies of the presentation (complete or abbreviated) would have either been immediately available or available upon request. Alternatively, documents such as that used for the Master's level will be placed in the library for public distribution. The Bennett document itself sets forth the basis for a 35 USC 102(b) rejection since the date of the Bennett document predates the applicant's disclosure by more than one year. There is no indication that there is a policy of confidentiality that would have involved such presentations. Hence, MPEP 2128 and 2128.01 apply. The prior art of ¶¶ 7. and ¶ 8. above applies as indicated and the prior art of Bennett along with the Masters Presentation also appears to apply. In response to this office action, applicant is required to show in detail why the Bennett document and the Masters Presentation should not also be used as prior art.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Claims 1-2, 4-24, 26-44 are rejected.

Correspondence Information

13. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 5:30 a.m. to 4:00 p.m.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant recorded in the applicant's file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,
Washington, D. C. 20231;

Hand delivered to:

Receptionist,
Customer Service Window,
Randolph Building,
401 Dulany Street,
Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2129

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Joseph P. Hirl/
Primary Examiner, Art Unit 2129
August 13, 2008